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⑦1 Anmelder:  
Weber, Rudolf, Dipl.-Ing., 40589 Düsseldorf, DE

⑦2 Erfinder:  
Weber, Rudolf, 40589 Düsseldorf, DE; Pütz, Jean,  
50825 Köln, DE

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⑤4 Wasserlösliche Beutel mit Wandmittelbestandteilen (Baukastenprinzip)

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Family members

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DE	P	19521140	19961212 A1 + LAYING OPEN FOR PUBLIC INSPECTION
			19970320 8180 MISCELLANEOUS PART 1 DIE BEZEICHNUNG IST ZU
			AENDERN IN: WASSERLOESLICHE BEUTEL MIT
			WASCHMITTELBESTANDTEILE (BAUKASTENPRINZIP)

2 PRS-INFO

### Description

So-called washing agent compounds, which include as desired the necessary substances for washing, such as water softeners, washing agents, bleaching agents, have been in existence for many years. The classic example is the combination of the water softening agent "Henko"- washing agent "Persil"- rinsing whitener "Sil".

However, during the practical use nowadays of conventional washing agent compounds, where substances contained in the washing agent are dependent upon time or temperature, chemical reactions can cause reductions in the washing power and it is these reductions which should be avoided. For example, the washing power is considerably affected when the enzymes and bleaching agents are used simultaneously. Furthermore, mechanical losses of the washing agent can occur if substances pass into the lye drain system of washing machines and are discharged unused into the drainage water.

In order to prevent chemical and mechanical losses of the washing agent, a washing agent compound was developed with which it is possible to mix the substances necessary for the washing process in a purposeful manner depending upon the washing power required.

The individual substances or substance mixtures are enclosed in water-soluble sheets - in the form of bonded bags - which render it possible to obviate chemical and mechanical losses of the washing agent.

Possible sheeting for the packaging includes water-soluble sheeting made from polyvinyl alcohol (PVAL), gelatine, water-soluble modified cellulose derivatives and sheet-forming sugar compounds.

The tests were preferably performed using PVAL sheeting which comprised a thickness of 0.04 mm. Depending upon the degree of saponification of the PVAL the solubility can also be varied in dependence upon the temperature, so that disturbing substances are displaced effectively with respect to time and temperature. The PVAL sheets are degradable in waste

waters up to the point of mineralisation.

The following substances are enclosed in the tubular bags:

- Water softening agents - sheet silicate SKS-6
- Washing agent enzymes - prilled and granulated, individually and in mixtures, such as proteases, amylases, lipases and cellulases
- Surfactant mixtures consisting of powders - FAS, APG etc.
- Colour-inhibitors, such as polyvinyl pyrrolidone - PVP
- optical brighteners, e.g. distyrylbiphenyl derivatives
- Greying-inhibitors, non-ionic poly-condensation products
- Bleaching agents, Na percarbonate with and without TAED.

It is possible to combine mixtures specific to the relevant washing processes from these individual substances in PVAL bags, for example, for:

- white washes  
water softeners  
surfactant mixtures  
washing agent enzyme  
optical brighteners  
bleaching agents
- coloured washes  
water softeners  
surfactant mixtures  
colour inhibitors  
washing agent enzymes
- curtains  
water softeners

surfactant mixtures

washing agent enzymes

greying-inhibitors

bleaching agents

**Claims:**

1. Water-soluble sheet bags preferably in PVAL which are filled with portions of washing agent components in quantities suitable for the relevant washing process.
2. Water-soluble sheet bags according to claim 1, wherein the PVAL bag comprises sheet silicate SKS-6 alone or mixtures of SKS-6 with soda and poly-acrylate as a water softener.
3. Water-soluble sheet bags according to claims 1-2, wherein the PVAL bag comprises sodium citrate alone or in mixtures with the substances mentioned in claim 2 for the purpose of binding the water softeners.
4. Water-soluble sheet bags according to claim 1, wherein the washing agent enzymes such as proteases, amylases, lipases and cellulases- prilled, granulated, pulverised - are contained alone or in mixtures.
5. Water-soluble sheet bags according to claim 1, wherein powders of surfactant mixtures on the basis of fatty alcohol sulfate C12-18 are included with non-ionic alkyl poly glucoside in different mixture ratios.
6. Water-soluble sheet bags according to claim 1, wherein powdery optical brighteners, for example, distyrylbiphenyl derivatives, are contained alone or in mixtures with sodium carbonate, sodium bicarbonate or sheet silicate SKS-6.
7. Water-soluble sheet bags according to claim 1, wherein greying-inhibitors, for example: non-ionic poly condensation products or water-soluble methyl- or carboxymethyl celluloses are contained.
8. Water-soluble sheet bags according to claim 1, wherein the powdery colour-inhibitor polyvinyl pyrrolidone PVP is contained alone or in mixtures with cationic quaternary

ammonium compounds.

9. Water-soluble sheet bags according to claim 1, wherein bleaching agents, such as Na-percarbonate is contained with and without bleaching activator TAED.
10. Water-soluble sheet bags according to claim 1, wherein all the substances mentioned in claims 1 -9 are included as a complete washing agent in mixtures suitable for the relevant washing processes.
11. The substances packaged in PVAL bags are used in a combined manner specific for the relevant washing processes (compounds).
12. The PVAL bags can be soluble in dependence upon the temperature so that chemical losses of the washing agent caused by disturbing or damaging influences by the substances are obviated.